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XVI. *Experiments upon a Substance called Dapêche from South America.* By William Allen, Esq. F.L.S.

Read May 7, 1805.

THE worthy Vice-president of this Society, Jonas Dryander, Esq. favoured me with a specimen of a substance sent to Sir Joseph Banks from South America, by Humboldt. It is said to be found at the depth of two or three feet from the surface of the earth. In appearance it very much resembles a dried Fungus, having the same spongy texture: internally it is nearly white; and although in its external character so different from Caoutchouc, the results of a variety of experiments leave no room to doubt that it is a modification of the same substance. The milky juice of the *Haweia Caoutchouc* and *Jatropha elastica*, from which the Caoutchouc or common Indian rubber is obtained, undergoes a considerable change on exposure to atmospheric air: like blood recently drawn from the veins, it separates into two parts, viz. an aqueous fluid, and the concrete substance called Elastic Gum.

The specimen appears to have been produced by successive deposits of milky juice; but on account of its peculiar situation, the changes have probably not taken place in the same order, nor to the same extent, as when completely exposed to the powerful agency of atmospheric air.

The Dapêche burns freely when held to the candle; it removes black-lead marks with the same facility as Caoutchouc; and in  
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like manner exhibits signs of electricity, by causing dry paper which has been rubbed with it to attract pith balls.

I made parallel experiments with equal quantities of Caoutchouc and Dapêche in the sulphuric, nitric, muriatic, and strong acetic acids, also with a mixture of nitric and muriatic acids: they were performed in a temperature between 32° and 42° of Fahrenheit, and there was a striking similarity in the results.

Nitric acid, even without the application of heat, dissolved both these substances almost entirely; and on the addition of water to the clear solutions, copious precipitates were afforded, which, being washed and dried, amounted to exactly one half of the original weight.

The *precipitate* from Caoutchouc was dissolved by boiling alcohol; that from Dapêche nearly so: but alcohol produces no effect upon Caoutchouc itself, and only renders Dapêche more elastic.

The mixture of nitric and muriatic acids did not appear to dissolve any part of these substances; but they had evidently undergone a change, and had increased in weight—the Dapêche particularly: they no longer melted on exposure to heat, but were converted into a dense coal.

By distillation to dryness in glass retorts, the following results were obtained:

<i>Caoutchouc</i> 100 parts.	
A brown empyreumatic oil containing no trace of acid	92
14 cubic inches of gas (probably carburetted hydrogen)	2
Carbonaceous residuum	6
	100
	Dapêche

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*Dapêche in 100 parts.*

A brown empyreumatic oil	-	-	-	-	80
Water slightly acid	-	-	-	-	2
Carburetted hydrogen	-	-	-	-	2
Carbonaceous residuum	-	-	-	-	16
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I did not observe any trace of ammonia, though it is generally stated to be one of the products.